

CLAIMS

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1. A valve actuator assembly for actuating a valve, comprising:
 

an electrohydraulic actuator having a piston being translatable responsive to an actuating fluid bearing on a piston surface, the piston surface being in fluid communication with an actuator valve, the actuator valve being in selective fluid communication with a source of actuating fluid under pressure, the actuator valve being shiftable to selectively port and vent actuating fluid to and from the piston surface; and

a rocker arm being rotatable about a hinge point, a first arm portion extending from the hinge point to a proximal end and a second arm portion extending from the hinge point to a distal end, the proximal end being operably coupled to the piston and the distal end being operably coupled to the valve, the first arm portion being shorter than the second arm portion.
  2. The valve actuator assembly of claim 1, the electrohydraulic actuator being displaced laterally from a valve longitudinal axis.
  3. The valve actuator assembly of claim 1, the actuator valve being actuated by at least one solenoid.
  4. The valve actuator assembly of claim 3, the actuator valve being actuated by a first solenoid and a second opposed solenoid.

5. The valve actuator assembly of claim 3, the actuator valve being actuated by a first solenoid and an opposed spring.
6. The valve actuator assembly of claim 1, the source of actuating fluid under pressure being a high pressure rail.
7. The valve actuator assembly of claim 1, the actuating fluid being engine lubricating oil.
8. The valve actuator assembly of claim 1, a hydraulic adjust mechanism being disposed intermediate the electrohydraulic actuator piston and the rocker arm.
9. The valve actuator assembly of claim 1, the actuator valve being in selective fluid communication with a reservoir at substantially ambient pressure.
10. A valve actuator for actuating a valve, comprising:  
a hydraulically actuated servomechanism having an actuator valve and a drive piston, motion of the actuator valve relative to the drive piston acting to open and close certain orifices for controlling fluid acting on the drive piston; and  
a rocker arm being rotatable about a hinge point, a first arm portion extending from the hinge point to a proximal end and a second arm portion extending from the hinge point to a distal end, the proximal end being operably coupled to the drive piston and the distal

end being operably coupled to the valve, the first arm portion being shorter than the second arm portion.

11. The valve actuator assembly of claim 10, the electrohydraulic actuator being displaced laterally from a valve longitudinal axis.

12. The valve actuator assembly of claim 10, the actuator valve being actuated by at least one solenoid.

13. The valve actuator assembly of claim 12, the actuator valve being actuated by a first solenoid and an opposed spring.

14. The valve actuator assembly of claim 10, the actuator valve including a spool valve, the spool valve being shiftable to selectively port actuating fluid to the drive piston and to selectively vent actuating fluid from the drive piston.

Sub 15. The valve actuator assembly of claim 10, the source of actuating fluid under pressure being a high pressure rail.

16. The valve actuator assembly of claim 10, the actuating fluid being engine lubricating oil.

17. The valve actuator assembly of claim 10, a hydraulic adjust mechanism being disposed intermediate the electrohydraulic actuator piston and the rocker arm.
18. The valve actuator assembly of claim 10, the actuator valve being in selective fluid communication with a reservoir at substantially ambient pressure.
19. A valve actuator assembly for actuating a valve, the valve having a longitudinal axis comprising:
- an electrohydraulic actuator being displaced a lateral distance from the valve longitudinal axis; and
  - a rocker arm being rotatable about a hinge point, a first arm portion extending from the hinge point to a proximal end and a second arm portion extending from the hinge point to a distal end, the proximal end being operably coupled to the second stage piston and the distal end being operably coupled to the valve, the first arm portion being shorter than the second arm portion, the rocker arm spanning the lateral distance.
20. The valve actuator assembly of claim 19, the electrohydraulic actuator having a piston being translatable responsive to an actuating fluid bearing on a piston surface, the piston surface being in fluid communication with an actuator valve, the actuator valve being in selective fluid communication with a source of actuating fluid under pressure, the actuator valve being shiftable to selectively port and vent actuating fluid to and from the piston surface.

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21. The valve actuator assembly of claim 20, the electrohydraulic actuator being displaced laterally from a valve longitudinal axis.

22. The valve actuator assembly of claim 21, the actuator valve being actuated by at least one solenoid.

23. The valve actuator assembly of claim 22, the actuator valve being actuated by a first solenoid and a second opposed solenoid.

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24. The valve actuator assembly of claim 22, the actuator valve being actuated by a first solenoid and an opposed spring.

25. The valve actuator assembly of claim 20, the source of actuating fluid under pressure being a high pressure rail.

26. The valve actuator assembly of claim 20, the actuating fluid being engine lubricating oil.

27. The valve actuator assembly of claim 20, a hydraulic adjust mechanism being disposed intermediate the electrohydraulic actuator piston and the rocker arm.

28. The valve actuator assembly of claim 20, the actuator valve being in selective fluid communication with a reservoir at substantially ambient pressure.

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29. The valve actuator assembly of claim 19, the hydraulically actuated servomechanism having an actuator valve and a drive piston, motion of the actuator valve relative to the drive piston acting to open and close certain orifices for controlling fluid acting on the drive piston.

30. The valve actuator assembly of claim 29, the electrohydraulic actuator being displaced laterally from a valve longitudinal axis.

31. The valve actuator assembly of claim 29, the actuator valve being actuated by at least one solenoid.

32. The valve actuator assembly of claim 31, the actuator valve being actuated by a first solenoid and an opposed spring.

33. The valve actuator assembly of claim 29, the actuator valve including a spool valve; the spool valve being shiftable to selectively port actuating fluid to the drive piston and to selectively vent actuating fluid from the drive piston.

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34. The valve actuator assembly of claim 29, the source of actuating fluid under pressure being a high pressure rail.

35. The valve actuator assembly of claim 29, the actuating fluid being engine lubricating oil.

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36. The valve actuator assembly of claim 29, a hydraulic adjust mechanism being disposed intermediate the electrohydraulic actuator piston and the rocker arm.
37. The valve actuator assembly of claim 29, the actuator valve being in selective fluid communication with a reservoir at substantially ambient pressure.
38. A method of stroke amplification, comprising:  
controlling an actuator electrically;  
selectively porting an actuating fluid to an actuator piston responsive to a controlling command;  
stroking the actuator piston a certain stroke length;  
rotating a rocker arm about a hinge point by means of the piston stroke; and  
amplifying the piston stroke by means of the rocker arm having a first arm portion extending from the hinge point to a proximal end and a second arm portion extending from the hinge point to a distal end, the proximal end being operably coupled to the second stage piston and the distal end being couplable to valve to be stroked, the first arm portion being shorter than the second arm portion.
39. The method of claim 38, including laterally displacing the electrohydraulic actuator from a valve longitudinal axis.

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40. The method of claim 38, including actuating the actuator valve by at least one solenoid.
41. The method of claim 40, including actuating the actuator valve by a first solenoid and an opposed spring.
42. The method of claim 38, including shifting a spool valve to selectively port actuating fluid to the drive piston and to selectively vent actuating fluid from the drive piston.
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43. The method of claim 38, including providing the source of actuating fluid under pressure by means of a high pressure rail.
44. The method of claim 38, including providing engine lubricating oil as the actuating fluid.
45. The method of claim 38, including hydraulically adjusting an interface disposed intermediate the electrohydraulic actuator piston and the rocker arm.
46. The method of claim 38, including selectively fluidly communicating the actuator valve with a reservoir being at substantially ambient pressure.